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AUTHOR Quay, Lorene C.; And Others
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ABSTRACT

Although lower socioeconomic status (SES) black children have been shown to be inferior to middle-SES white children in communication accuracy, whether the problem is in encoding (production), decoding (comprehension), or both is not clear. To evaluate encoding and decoding separately, tape recordings of picture descriptions were obtained from lower-SES black, lower-SES white, and middle-SES white nine-year old encoders. Each encoder's descriptions were then played to a lower-SES black, lower-SES white, and middle-SES white decoder who had to select the pictures described from arrays of similar pictures. The groups were compared on encoding and decoding. Encoding differences were found between lower and middle-SES groups, but not between black and white groups of the same social class. (Author/RKM)

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# Communication Encoding and Decoding in Children from Different Socioeconomic and Racial Groups

Lorene C. Quay, Marilyn Mathews, and Beth Schwarzmueller

Georgia State University

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Abstract

Although lower-SES and black children have been shown to be inferior to middle-SES and white children in communication accuracy, whether the problem is in encoding (production), decoding (comprehension), or both is not clear. To evaluate encoding and decoding separately, tape recordings of picture descriptions were obtained from lower-SES black, lower-SES white, and middle-SES white nine-year-old encoders. Each encoder's descriptions were then played to a lower-SES black, lower-SES white, and middle-SES white decoder who had to select the pictures described from arrays of similar pictures. The groups were compared on encoding and decoding. No significant differences were found between groups on decoding. Encoding differences were found between lower- and middle-SES groups, not between black and white groups of the same social class.

One dimension of language development is communication, or the sharing of information between a speaker and a listener. Communication effectiveness requires coding ability, which is composed of two parts: (1) encoding, the speaker's ability to present information to the listener, and (2) decoding, the listener's ability to comprehend information presented to him by a speaker. Several empirical comparisons have indicated that the communication ability of black and lower-SES white children is inferior to that of white middle-SES children and that for these groups social-class membership has a greater influence on communication style than ethnic-group membership (Baldwin, McFarlane, & Garvey, 1971; Cazden, 1972; Heider, 1971). Studying communication style, Hawkins (1969) found that lower-SES children used the pronoun more frequently while middle-SES children used the noun more frequently, giving greater specificity to their expressions. Supporting the observation of greater specificity, Heider (1971) found that middle-SES children, in contrast to lower-SES children, described individual parts of a stimulus instead of the whole stimulus and gave descriptive rather than inferential responses. Also, middle-SES children were more fluent and presented more information.

Relevant to the issue of communication style and accuracy is the suggestion that minority, specifically black, children are penalized by the use of white middle-class speech patterns in the schools and should be taught to read (a form of decoding) in their own nonstandard dialect (Baratz & Shuy, 1969; Stewart, 1970). Underlying this viewpoint is the assumption that black children both encode and decode nonstandard speech more effectively than they do the standard language. The same argument could presumably be made for lower-class white, particularly

Southern rural children, since their speech patterns are also likely to be different from those of the middle class.

On the other hand, a growing body of research indicates that black children comprehend standard English as well as they comprehend the nonstandard dialect, even though they tend to produce nonstandard dialect (Hall & Turner, 1974; Quay, 1971, 1972, 1974). These findings suggest that differences, especially racial differences, may occur in the encoding rather than the decoding function.

Baldwin, McFarlane, and Garvey (1971) reported both social-class and racial differences in fifth-grade children encoders and decoders. However, since they composed all encoder-decoder dyads of children from the same social group and used the decoding score as the criterion for both decoding and encoding, the specific function on which the children differed could not be specified. If the lower-class children had had the opportunity to decode the supposedly superior encodings of the middle-class children, their decoding scores may have been higher. Thus, because encoding was not varied across social class, the conclusion that racial and social-class differences occurred for <u>both</u> encoding and decoding was unwarranted. This methodology permitted comparisons of encoder-decoder effectiveness in children's interactions with their own social group, but it did not permit comparisons of either encoding or decoding ability taken separately, since one was not controlled, nor varied, in testing the other.

To gain further knowledge about communication and communication problems, it is necessary to examine the decoding and encoding functions separately. Posner and Saltz (1974), in studying conditional communication in white children, were able to separate encoding from decoding

because they composed dyads of white children from different social classes. They found lower-SES white children to be inferior to middle-SES white children in expression, but not in comprehension. Whether the same results would be obtained for lower-SES black children when communicating with other lower-SES black children and with middle-SES white children would have implications for the argument that black children are penalized by the use of white, middle-class speech patterns in the schools (Baratz & Shuy, 1969).

The purpose of this research was to compare lower-SES black (LB), lower-SES white (LW), and middle-SES white (MW) children in coding ability and to ascertain whether differences, if they exist, are in encoding ability, decoding abiltiy, or both. To examine encoding and decoding separately, as a function of social group, encodings from children of each social-class and racial group were presented to children from the same and all other social-class and racial groups.

This procedure permitted a comparison of the relative effectiveness of the encoding and decoding of different social-class and racial groups when they were communicating with members of their own group, whose speech patterns were presumably the same as their own, and to members of other groups, whose speech patterns were presumably different. If the performance of black and white lower-SES children is hindered by white middle-SES speech patterns, the lower-SES children would be expected to decode more effectively when encodings are presented by members of their own groups. However, evidence indicating that middle-SES children are more fluent, thorough, specific, and descriptive (Heider, 1971) suggests the opposing expectation that lower-SES children, as well as

middle-SES children, will decode more effectively when encodings are presented by middle-SES children.

Some research findings have suggested that even children of equivalent intellectual ability who are from different social-class groups use language in different ways (See Cazden, 1972). To examine the possibility that differences in coding ability simply reflect social-class differences in measured intelligence, the relationship between IQ and communication accuracy was evaluated.

The hypotheses were: (1) Communication accuracy is influenced by social class but not by race. (2) Lower-SES children are inferior to middle-SES children in encoding (expression) but not in decoding (comprehension). (3) All groups decode more effectively when listening to the encodings of middle-class children. (4) When intelligence is at least normal, social class differences in communication accuracy are not related to IQ.

## Method

The first eight sets of pictures in the Picture Identification Task developed by Baldwin, et al (1971) were used. Each set consisted of an array of seven non-culturally related figures on a single page. One of the pictures, the stimulus picture, contained four critical attributes. The other six pictures differed from the stimulus picture on one, two, or three of these attributes. Two children, seated at a table with a screen between them had an identical array of pictures. The encoder's task was to describe the stimulus picture so that the decoder could select it from the array. The greater the number of attributes described, the more information the encoder communicated to the decoder. Accuracy scores were obtained by counting the number of critical attri-

butes which the picture chosen by the listener had in common with the correct picture in each set and summing these scores over all sets. The higher the accuracy score, the more attributes the child accurately communicated.

The Hollingshead-Redlich Occupational Scale (1958) was used to ascertain social-class status. Lower-SES children were selected from the lowest two classifications; middle-SES children, from the highest three classifications. The Peabody Picture Vocabulary Test (PPVT) was administered to each child selected, and a child had to have an IQ of at least 85 to be included in the sample.

To obtain the initial encodings, 30 eight- and nine-year old encoders, 16 boys and 14 girls from the third and fourth grades, were randomly selected, with ten children being selected from each of the three populations: LB, LW, MW. Each encoder described the pictures to a classmate, and tape recordings of the descriptions were made.

For the actual evaluation of encoding and decoding accuracy, an additional 90 eight- and nine-year old children (decoders), 30 from each of the three populations, were randomly selected from seven schools in the metropolitan Atlanta area. The total of 54 boys and 36 girls was evenly distributed among the three groups. Each tape recording made in the previous session was randomly matched to three of these children, one child from each social group. Each decoder listened to the tape recording and selected from each set the picture which he thought was described.

Correlations between PPVT IQ scores and accuracy scores were computed. Accuracy scores were analyzed by means of a 3 (encoder social class) x

3 (decoder social class) ANOVA, with the individual speaker nested within the encoder (speaker) variable.

To ascertain whether decoding performance was a function of the number of critical attributes of the pictures which the encoding social groups named, the three social groups were compared on the number of named critical attributes by means of a one-way ANOVA.

## Results

Because no sex differences in accuracy scores occurred, no further analysis by sex was made. Because IQ differences were obtained between the groups for both encoders (*Ms*: LB = 95.1., LW = 101.8, MW = 116.9, $F[2, 27] = 19.40$, $p < .01$) and decoders (*Ms*: LB = 94.4, LW = 99.7, MW = 112.5; $F[2, 87] = 6.41$, $p < .01$), two correlational procedures were carried out to ascertain whether a relationship existed between IQ and coding ability. The Pearson *r* between IQ and accuracy score for speakers ($r = .03$) and listeners ($r = .07$) indicated no overall relationship between IQ and communication accuracy for either encoders or decoders. The within groups correlation, which represents the pooled cell correlations, again indicated no significant overall relationship, $r = .10$. Because Huck (1972) has shown that when the within groups correlation is not significant, ANOVA is a more powerful test than ANCOVA, IQ was not used as a covariate in the group comparisons.

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Insert Table 1 about here

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Table 1 presents the *Ms* and *SDs* for accuracy scores for the three decoder groups when they listened to each of the three encoder groups. No significant difference was found between groups on the main effect

of decoding when decoders listened to encoders from all social groups combined. A significant difference occurred between groups on the main effect of encoding, $F[2, 27] = 4.32$, $p < .05$, indicating that when the accuracy scores of all decoding groups were combined for each encoding group, differences occurred according to which group did the speaking. A Sheffé Test indicated that the difference occurred between social class, but not racial groups. Accuracy scores of all decoding groups were significantly higher when the white middle-SES children did the encoding. No significant interactions occurred.

The possible range of scores on number of critical attributes named by the encoders was 0 to 24. The means and standard deviations for the three groups were: LB--$M = 11.0$, $SD = 6.68$; LW--$M = 12.0$, $SD = 4.97$; MW--$M = 17.4$, $SD = 6.87$. The fact that the difference did not reach significance, $F[2, 27] = 3.05$, with a critical value of $F = 3.35$ necessary for $p = .05$, may be attributable to the high within-group variability.

## Discussion

No differences were found between black and white lower-SES children in either encoding or decoding ability. However, both groups differed from white middle-SES children in encoding, but not in decoding. All groups decoded more effectively when listening to the encoding of middle-SES children. These findings support the results of other research in indicating that black children are competent in comprehending standard English. Thus, black children do not appear to be penalized, at least in this type of task, by the use of white middle-SES speech patterns. The task used in this study was quite formal, or academic. It is possible that in informal or social situations black children would exhibit

greater competence when their own speech patterns were used. However, it has been in the academic situation that the use of middle-SES speech patterns for black children has been criticized.

The communication inferiority of lower-SES children appears to be in speech production rather than comprehension. The reason for this encoding inferiority cannot be ascertained from these data. However, even though the difference in the number of critical attributes named did not reach significance, the fact that, out of a 24-point maximum, the mean number named by the middle-SES children was 5.5 greater than the mean number named by the lower-SES children is suggestive that the middle-SES children were more specific in describing the stimuli. Greater specificity of middle-SES descriptions has been found in other speech-generating situations (Heider, 1971). The fact that IQ was not related to communication accuracy suggests that the descriptions are not a function of measured intelligence, lending support to some previous findings (See Cazden, 1972).

The discrepancy between the encoding and decoding abilities of lower-SES children may be caused by insufficient opportunities to generate speech in interactions with adults but ample opportunities to listen to adult speech. In most elementary classrooms talking is discouraged, and greater emphasis is placed on comprehension than on expression.

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## Footnotes

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Table I

Accuracy Score Ms and SDs for Decoder Groups Listening to Encoder Groups

| Encoder Group | Decoder Group: Lower-Class black | | Lower-Class white | | Middle-Class white | |
|---|---|---|---|---|---|---|
| | M | SD | M | SD | M | SD |
| Lower-class black | 23.2 | 3.22 | 21.8 | 3.52 | 20.8 | 3.22 |
| Lower-class white | 23.2 | 3.58 | 22.7 | 3.68 | 23.3 | 2.50 |
| Middle-class white | 24.0 | 4.27 | 23.8 | 4.10 | 25.2 | 2.94 |